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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,668	01/29/2004	Julian S. Crawford	033583.00007	5426

7590 04/05/2006

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Greenville, SC 29603

EXAMINER

GRAY, JILL M

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/767,668

Applicant(s)

CRAWFORD ET AL.

Examiner

Jill M. Gray

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 10 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 10 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 10, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeAngelis et al, 6,855,421 B2 (DeAngelis) in view of Patel et al, 6,528,572 B1 and Shibuta 6,184,280 B1.

DeAngelis teaches a yarn comprising a primary component and a secondary component, the primary component comprising a core yarn that can be monofilaments or multifilaments, i.e., at least one set elongated filament, and said secondary component can be unset and is a blend of a single polymeric material and electrical conductors such as conductive fibers that can be formed from carbon, whereby said secondary component is bonded with said primary component along its length, per claims 1, 10 and 22. See abstract, column 1, lines 49-59, column 2, lines 49-55, and Figure 1. The polymeric material is of the type contemplated by applicants in claims 2 and 3, such as polyethylene, and the secondary component can be a sheath bonded with and surrounding the primary component, as required by claim 4. See column 1, lines 60-65 and column 2, lines 24-26. DeAngelis does not specifically teach that the conductive fibers are carbon nanotubes in an amount of up to .5% of the multi-component yarn.

Patel teaches conductive polymer compositions comprising polymeric resins and electrically conductive filler materials. These filler materials can be carbon fibers such as carbon nanotubes wherein the nanotubes can be used in amounts as low as 0.025 wt%. Shibuta teaches an electrically conductive polymer composition comprising carbon nanotubes, white pigment and polymer, wherein the carbon nanotubes are added in an amount of at least 0.01 wt% and less than 2 wt%. In addition, Shibuta teaches that his conductive polymer composition can be used to form moldings including electrically conductive filaments, and conjugate fibers (per claim 5). See column abstract, column 1, lines 7-9, column 2, lines 13-23, column 6, lines 9-14, column 8, lines 2-8 and lines 33-45. While Patel does not specifically teach the formation of fibers from his composition, the teachings of Shibuta clearly demonstrate that it was known in the art at the time the invention was made that conductive polymer compositions are used in the formation of molded articles including electrically conductive filaments. In addition, the teachings of Patel and Shibuta clearly teach that the formation of conductive polymers using a blend of a polymer component and carbon nanotubes was known in the art at the time of the invention thereof, wherein lowered amounts of conductive filler was possible when using carbon nanotubes. Therefore, the teachings of Patel and Shibuta would have provided motivation to the skilled artisan at the time the invention was made, to modify the teachings of DeAngelis by using carbon nanotubes instead of carbon black as the conductive filler, with the reasonable expectation of obtaining a conductive polymeric composition and fiber with minimal filler loading without sacrificing the mechanical properties of the resultant fiber as well as

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minimizing the degree of blackening in the polymer composition. Moreover, there is no clear factual evidence on this record of superior or unexpected properties of the instant claimed yarn from that of the prior art.

Response to Arguments

3. Applicant's arguments with respect to claims 1-4, 10 and 22 have been considered but are moot in view of the new ground(s) of rejection.

No claims are allowed.

Conclusion

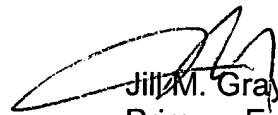
4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jill M. Gray whose telephone number is 571-272-1524. The examiner can normally be reached on M-Th and alternate Fridays 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jill M. Gray
Primary Examiner
Art Unit 1774

jmg